Next-Generation Entertainment: Video Goes Mobile

Laurianne McLaughlin

Video has never been sexier, and no, we’re not talking about the latest James Bond movie. The recent US$1.76 billion “Gootube” deal, in which search-engine king Google bought video-clip prince YouTube, generated more press than a Hollywood marriage. At the core of YouTube’s stunning rise to fame is a revolutionary idea for “old media” companies: thanks to Internet delivery, video content is no longer tied to a device or a time. And as millions of YouTube users have demonstrated, consumers want all kinds of video—not just 30-minute TV shows or 2-hour movies.

But do people really want to see video on cell phones? And what are the hurdles to delivering video to mobile devices like cell phones?

The big hurdles to mainstream adoption of video on cell phones today aren’t so much matters of technology as they are of business models. That’s good news, if you think companies like Verizon can be as clever as, say, Apple has been with iTunes, in presenting an elegant device, striking deals for content, making end-user software simple, and keeping pricing attractive.

In Japan and Korea, as well as Western Europe, where cellular providers have been quick to find business models that made sense, video on cell phones is more popular than it is in the United States. The same is true for television delivered via the Internet, which is taking off in Western Europe but hasn’t yet established a foothold in the US.

Still, all signs point to an entertainment future filled with choice. “As TV increasingly gets fed via the Net or via IP-based networks, you’re going to have more power to decide what to watch,” says Suranga Chandratillake, founder and CTO of video search company Blinkx. “Maybe not in two years, but in five years, it will be a significant part of what we do.”

**JAPAN, WESTERN EUROPE LEAD**

Of course, you can watch video clips on some cellular phones in the US today. Verizon recently signed an exclusive, buzz-generating deal with YouTube so that its cellular customers can access that content. But video on cell phones remains far from a mainstream pastime in the US.

For that to change, cell phone users need advances in three key areas: high-speed-network access, good devices at a range of price points, and attractive content packages with breadth and affordability, industry analysts say.

Consider the situation in Japan, where cellular giant NTT DoCoMo has tremendous control of the cellular market from end to end, says Shiv Bakhshi, director of mobility research for market research firm IDC. DoCoMo was able both to build up a high-speed network and to offer customers a wide range of video-friendly phones. In Western Europe, huge competition among device makers prompted the same result—a variety of video-friendly handsets and prices, he says.

In the US, customers are stuck with whatever phones their current providers offer. Even if one provider came up with a breakthrough device or service, many customers would remain locked into long-term contracts with other carriers.

The network issue is really a matter of time. As third-generation (3G) high-bandwidth networks from the likes of Cingular and Sprint become widespread in the US, video will go along for the ride, Bakhshi says: “As the networks mature, we’ll see more video.”

**THE RIGHT GADGET**

Getting the right gadget could take longer. While cell phones that can capture digital still pictures have become the norm in the United States, the sales of “smart phones,” which combine cell phone, PDA features, and Web access, from companies including Motorola and Nokia, haven’t reached beyond technology mavens yet.

Of course, the MP3 player market didn’t take its skyrocketing ride until a company that reeks of consumer cool, Apple, released the iPod with its simple companion music service, iTunes. Today that service also delivers TV shows and
movies to some iPod owners (as it will to iPhone owners when that product comes to market).

The business opportunity looks large. IDC estimates that 422 million video-capable phones shipped worldwide in 2006 and the number will increase to 887 million by 2010. The estimate for the US was 69 million in 2006, increasing to 162 million by 2010.

But what about watching video on such a small screen? “The cell phone is not a great viewing device,” says Blinkx’s Chandratillake. However, he doesn’t expect video on mobile devices to replace large-screen TVs; it will simply provide another outlet. “The cell phone won’t be all-encompassing,” he says. “You’re not going to watch a full-length movie on a cell phone.”

There doesn’t seem to be a magic screen size that makes video-enabled cell phones viable, IDC’s Bakhshi says. Many industry pundits declared the iPod’s screen tiny for video, but that hasn’t stopped people from watching. Consumers will want a range of screen sizes, Bakhshi says, in a range of devices, with different price points.

What kind of video will be most in demand? Music, sports, and news clips are the often-discussed leaders, but Bakhshi also sees more possibilities for user-generated content. US wireless music services will have more than 50 million users and top one billion dollars in revenue in 2010, IDC predicts. That same year, IDC predicts almost 60 percent of handsets shipped in the US will be music-enabled. Digital-music companies believe mobile video will help them sell the music clips.

**VIDEO SEARCH PROBLEMS**

By then, you’d better hope that technologists have made serious progress on a tricky problem for video-enabled phones: mobile search. Video on your

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**Wireless USB: Just the First UWB Battle?**

*Greg Goth*

The standards battle over personal area networking’s wireless Universal Serial Bus technology is over, but the potential for wireless USB’s parent technology, short-range ultrawideband (UWB) radio, is still wide open.

After a prolonged and fruitless struggle within the IEEE 802.15.3 wireless PAN’s task group to define a high-rate physical layer standard (TG3a), champions of two competing USB technologies each opted for divergent paths to the consumer. One camp, the UWB Forum, promoted a technology that provided simple backward-compatibility with the wired USB 2.0 specification through a two-band direct-sequencing (DS) radio operating between 3.1 to 4.9 gigahertz and 6.2 to 9.7 GHz. The other camp, led by Intel under the banner of the WiMedia Alliance, promoted a more complex, frequency-hopping orthogonal frequency division multiplexing (OFDM) technology, with 14 bands operating from 3.4 to 10.3 GHz.

The UWB Forum suffered what appeared to be a fatal blow when dominant member Freescale Semiconductor left the group and attempted to go straight to market with its proprietary DS-UWB technology, dubbed CableFree USB. Belkin demonstrated prototypes of the Freescale chipset to great fanfare at the January 2006 Consumer Electronics Show. Unfortunately for DS-UWB backers, Freescale could never deliver production chipsets to Belkin, which switched to Intel’s chips in September 2006.

**WIRELESS USB GETS CERTIFIED**

Meanwhile, the WiMedia Alliance pursued standards approval for its OFDM technology through Ecma International and the International Standards Organization, simultaneously picking up endorsements from the USB Implementers Forum and the Bluetooth Special Interest Group. The USB-IF held the first multi-vendor demonstration of Certified Wireless USB in June 2006. So, the market battle for wireless USB never happened.

WiMedia Alliance president Stephen Wood says the first products based on the certified technology are expected some time during the first quarter this year. He expressed dismay over the IEEE standards-process logjam, suggesting that two factors in particular had stalled the process and thereby inhibited market growth. First, task group voting is open to anyone who attends a small number of meetings, and second, technical decisions require a supermajority of 75 percent of eligible voters to pass. “In effect,” Woods wrote in a June 2006 white paper titled “USB Standards” (www.wimedia.org/en/resources/index.asp?id=...
cell phone will be rewarding only if you can easily find what you want. Search on a cell phone presents unique challenges compared to a PC.

First, search engine companies will have precious little display space in which to show the search results. Second, much of the information cell phone searchers will want is local data—say, relating to restaurants, traffic, or shopping. And localized search has been one of the toughest problems for the search engine companies to crack, though Google, Yahoo, and Ask.com all continue to work at it. Keeping up with constantly changing local data will be a no small task, but the revenue possibilities are significant. “One of the huge advantages of mobile is to do some geo-targeting—show relevant ads depending on where you are,” says David Ives, CEO of video search firm TVEyes.

But searching video is much tougher than searching text-based information. Search functions on video sites like YouTube today use keywords and metadata to match search requests and results, but neither works very well. Companies like Blinkx and TVEyes are working on better search technologies that use speech recognition and, in Blinkx’s case, some artificial intelligence technology to improve video search.

Make no mistake; this search problem will be solved, because advertisers will demand it, Ives says. Take the Google acquisition of YouTube. “The only way Google can monetize that video is to crack one of those video files, extract content, and run relevant ads alongside,” Ives says.

That brings up another rub about video. Many consumers won’t want to pay much for it. Part of what has helped iTunes succeed is its affordable per-song prices for music. “iTunes is a very clean model, but there’s a lot of interest in monetizing video via advertising,” Ives says.

MANY USES ENVISIONED FOR UWB

However, the delay might not hurt the long-term development of UWB consumer-oriented technology. Wireless USB is envisioned as only the first generation for UWB technology. Ultimately, UWB is expected to be instrumental in “refereeing” multidevice home entertainment and data networks. Bruce Watkins, president and chief operating officer of Pulselink—a startup offering a continuous wave (trademarked “CWave”) UWB technology aimed at this market—says the wireless USB battle might be obscuring the myriad technological avenues that remain open for innovators in UWB home networking. These innovations depend on the solid IEEE 802.15.3 media-access-control (MAC) standard that underlies interoperability in this sector.

A group of Wi-Fi vendors spearheaded the 802.15.3 effort, Watkins says, and set it up originally to operate with a 2.4 GHz carrier, just as Wi-Fi does. But Wi-Fi was designed for wireless, asynchronous Ethernet, and the group realized that if they ever wanted to move video with guaranteed QoS, they needed an isochronous MAC.

Watkins says Pulselink will begin marketing CWave products to set-top box makers. The first products will emphasize coaxial and hybrid coax/wireless connections, while also providing for purely wireless networking if service providers offer it to customers. “It’s the service providers who are cutting the checks, and they evaluate any increase to the cost of that set-top box on two fundamental premises,” Watkins says. “Does it increase revenues or decrease expenses? And there is no wireless technology that can answer that question, ours included.”

Pulselink’s technology might find a niche. It’s already demonstrated simultaneous IEEE 1394 and Ethernet transmissions over the same coax cable, and the CWave chipset recently brought the company the International CES Innovations 2007 Design and Engineering Award. Watkins says he looks on the WiMedia Alliance technology as more complementary than competitive with Pulselink’s. Nevertheless, some alliance members are also gunning for the same UWB-enabled, high-definition, multimedia networking market.

So, the battle over the USB standard might have been just the first between the WiMedia Alliance and the UWB Forum.
IPTV MAKES GAINS

Asian and European consumers are tuning into a technology that few US consumers understand yet: Internet Protocol TV, or IPTV. It’s delivered via broadband Internet, instead of via cable, and typically sold by a telecom company. IPTV is available on your TV via a set-top box and on your cell phone via a high-speed wireless connection. The TV content you can buy depends on what rights your provider has purchased.

The Gartner technology industry consulting firm estimates that some 3 million viewers subscribed to IPTV in 2005 and that almost 50 million will do so by 2010.

IPTV’s success rate will vary widely by worldwide region, depending on the existing market for broadband, cable, and phone services as well as on individual countries’ regulations around broadcast television, telephone service, and Net access.

For example, a November 2006 study from Forrester Research of Western Europe’s IPTV market found that subscriber interest and revenue potential vary widely between countries. France Telecom is enjoying one of the early successes, partly because cable TV wasn’t as entrenched in France as in other locales.

In South Korea, TU Media has won over some 950,000 subscribers as of late 2006 to its TU Media service, which uses a flavor of Digital Multimedia Broadcast technology to bounce television content from satellites to gadgets, including cell phones and in-car devices. DMB is a different technology standard from what the European companies use for Internet television, but the customers are mostly interested in the convenience of video-to-go. Customers pay about US$15 per month for access to a package of popular channels.

Some people in the US can tune into the television and music offerings of MobiTV, one of the early leaders in distributing mobile content, via carriers including Sprint and Cingular. But the company remains far from an everyday name. Recently named one of the World Economic Forum’s 2007 class of “technology pioneers,” MobiTV has also struck deals with wireless carriers in the UK, Canada, and Latin America. Subscribers now top one million, according to the company.

NEW WAVE OF WEB COMMERCE?

Consumers love television, but user-generated content—à la YouTube—and Web communities could play a big role in mobile video’s growth.

“Internet TV says infrastructure,” says Richard Wingard, CEO of Euclid Discoveries, one of the companies working on behind-the-scenes video-compression technology for mobile devices. “Interactive TV says I want to be a part of it.” People don’t want to just watch newscasts, they want to shoot video clips and upload them to news outlets, he says.

“For social-networking sites, video lets them bring what they’ve been wanting to the table—a more personalized environment,” Wingard says.

He sees Internet-based television and video on cell phones opening up a whole new wave of business for social-networking sites. Some companies already see the possibilities: MTV Networks, for example, recently bought Quizilla.com, a site where teenagers share creative writing and other content.

Wingard also sees room for plenty of video-based, community-minded businesses that simply aren’t practical today. Take high school girls’ basketball in the US, he says, an area he’s familiar with as a coach. Top players take thousands of videos at games, then mail videotapes to coaches all over the country, hoping to land college scholarships. University sports staffs must then sort through all the tapes.

“What if you could set up a Web site where you charged parents to upload video clips and charged coaches to search them wisely?” Wingard asks. Both sides would be thrilled to pay up, he bets.

COMPRESSION DILEMMA

But video compression remains a problem. Even with 3G wireless networks, consumers will need access to better video-compression technology than exists today. “If you can get better than MPEG-4 compression, the whole world opens up,” Wingard says. “There’s going to be a new definition of a personal communication device.”

His company is using mathematical transformations and computer vision techniques to “rethink compression and decompression,” Wingard says. For example, video compression “doesn’t like motion,” he says, but Euclid Discoveries uses information from motion to build models. Whereas compression technologies today compress a whole frame or picture, Euclid’s technology can apply different rules to different objects in the video.

When might improved compression using his company’s approach show up in commercial products? Less than two years, Wingard says, based on his talks with customers such as cell phone component makers and wireless network operators.

Certainly, the old rules about video content are already turning upside down. For example, wireless provider 3Group is making it possible for some customers in Britain to watch their home cable TV programming on their cell phones, if they own a Slingbox time-shifting device. The Slingbox gadget connects to a cable set-top box and broadband Internet connection to let customers stream video to a PC.

Will 2007 be “the year of Internet TV”? VoIP pioneer Jeff Pulver thinks so. (You can check out his blog at http://pulverblog.pulver.com for his take on the Internet TV future, and some example content.)

But the industry has tough work ahead as companies try to solve the device and search questions, plus sort through the advertising and business model issues.